TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371	ATTORNEY'S DOCKET NUMBER 20-973 U S APPLICATION NO (If known, see 37 CFR 1 5 **09/914945**

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/GB00/00989	16 March 2000	16 March 1999

TITLE OF INVENTION

Closed Circuit Television (CCTV) Camera and System

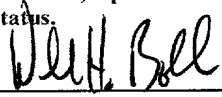APPLICANT(S) FOR DO/EO/US   Jia Hong Yin

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. [X] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.

4. [X] The US has been elected by the expiration of 19 months from the priority date (Article 31).

5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))

    a. [ ] is attached hereto (required only if not communicated by the International Bureau).

    b. [X] has been communicated by the International Bureau.

    c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).

6. [ ] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).

    a. [ ] is attached hereto.

    b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).

7. [X] Amendments to the claims of the International Aplication under PCT Article 19 (35 U.S.C. 371(c)(3))

    a. [ ] are attached hereto (required only if not communicated by the International Bureau).

    b. [X] have been communicated by the International Bureau.

    c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.

    d. [ ] have not been made and will not be made.

8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).

9. [ ] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).

10. [ ] An English lanuage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment.

14. [ ] A SECOND or SUBSEQUENT preliminary amendment.

15. [ ] A substitute specification.

16. [ ] A change of power of attorney and/or address letter.

17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.

18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).

19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).

20. [ ] Other items or information:

U.S. APPL. NO (if known, see 37 CFR 5) 09/914945	INTERNATIONAL APPLICATION NO PCT/GB00/00989	ATTORNEY'S DOCKET NUMBER 20-973

21. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):

		CALCULATIONS PTO USE ONLY

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO........... $1000.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO $860.00

International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO $710.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) $690.00

International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)............... $100.00

ENTER APPROPRIATE BASIC FEE AMOUNT = $ 860.00

Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)). $

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	$	
Total claims	8 - 20 =	0	x $18.00	$ 0	
Independent claims	3 - 3 =	0	x $80.00	$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $270.00	$ 0	

TOTAL OF ABOVE CALCULATIONS = $ 860.00

☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. + $

SUBTOTAL = $ 860.00

Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). $

TOTAL NATIONAL FEE = $ 860.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property + $

TOTAL FEES ENCLOSED = $ 860.00

Amount to be refunded:	$
charged:	$ 860.00

a. ☒ A check in the amount of $ __860.00__ to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-0687 . A duplicate copy of this sheet is enclosed.
(Order No. 20-973)

d. ☐ Fees are to be charged to a credit card. **WARNING: Information on this form may become public. Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO

William H. Bollman, Esq.
Manelli Denison & Selter PLLC
2000 M Street, NW
Suite 700
Washington, DC 20036
Telephone: 202-261-1020
Facsimile: 202-887-0336

SIGNATURE

William H. Bollman
NAME

36,457
REGISTRATION NUMBER

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Jia Hong Yin

U.S. Serial No.: **To be assigned**
International Application No.: **PCT/GB00/00989**
International Filing Date: **16 March 2000**
International Priority Date: **16 March 1999**

Title: **CLOSED CIRCUIT TELEVISION (CCTV) CAMERA AND SYSTEM**

PRELIMINARY AMENDMENT

Box PCT
Director of the US Patent & Trademark Office
Washington, DC 20231

Dear Sir:

Prior to action in, and calculation of fees for, the above-captioned application, please amend the application as follows:

IN THE SPECIFICATION:

Kindly amend the specification as follows:

Clean Specification

Page 1:

CLOSED CIRCUIT TELEVISION (CCTV) CAMERA AND SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a closed circuit television (CCTV) cameras and systems, and more particularly to multi camera CCTV systems.

2. Background

Such multi camera CCTV systems may include tens or even hundreds of cameras. Monitors are installed remote from the cameras and are usually watched by operators in a central control room or monitoring centre.

Page 2:

SUMMARY OF THE INVENTION

According to a first aspect of the invention there is provided: a camera having means for determining whether information detected in its field of view includes a moving object; processing means for determining whether said moving object exceeds a predetermined threshold; and means for transmitting at least a portion of said moving image to a remote location.

Page 4:

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will now be described, by way of example only, and with reference to the Figures, in which:

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

Figure 1 shows a block diagram of a camera 2, which includes Processing Unit 10 and MPEG 4 encoder 4. An actuator 8 is provided to move camera 2 in a controlled manner, eg, by tilting, panning or zooming. Processing unit 10 is shown in greater detail in Figure 2.

Version with Markings to Show Changes Made

Page 1, below the title, please insert heading -- BACKGROUND OF THE INVENTION --;

Page 1, above line 5, please insert heading -- 1. Field of the Invention --;

Page 1, above line 8, please insert heading -- 2. Background --;

Page 2, above line 2, please insert heading -- SUMMARY OF THE INVENTION --;

Page 4, above line 15, please insert heading -- BRIEF DESCRIPTION OF THE DRAWINGS --;

Page 4, above line 30, please insert heading -- DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS --.

IN THE CLAIMS:

Kindly amend the claims as follows:

Clean Set of Claims

3. A camera according to claim 1 wherein the camera has an actuator arranged to tile, pan or zoom.

4. A camera according to claim 1 wherein at least one motion sensor is included so that images are transmitted only if movement is detected.

Version with Markings to Show Changes Made

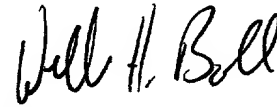Claim 3, line 1, delete "or 2";

Claim 4, line 1, delete ", 2 or 3".

REMARKS

By the amendment, the multiple dependencies have been removed from dependent claims 3 and 4 so that each claim depends from a single claim and to avoid the fee charged for such claims as originally presented.

Dated: September 6, 2001

Respectfully submitted,

William H. Bollman
Reg. No. 36,457

Manelli Denison & Selter PLLC
2000 M Street, NW
Suite 700
Washington, DC 20036-3307
TEL. (202) 261-1020
FAX. (202) 887-0336

5

4/pxb

1

CLOSED CIRCUIT TELEVISION (CCTV) CAMERA AND SYSTEM

5   The present invention relates to a closed circuit television (CCTV) cameras and systems, and more particularly to multi camera CCTV systems.

Such multi camera CCTV systems may include tens or even hundreds of cameras. Monitors are installed remote from the cameras and are usually watched by operators in
10   a central control room or monitoring centre.

Multi camera CCTV systems are used increasingly to improve security and safety in a myriad applications, including offices, car parks, shopping malls, on motorways, railways, and airports.
15

Analogue images obtained by the cameras may be transferred to the monitoring centre by cable which is connected to each camera. The installation of cables may be costly, or may not be practical for some situations where, for instance, only mobile cameras can
20   be used. In such situations CCTV systems send images via a radio frequency (RF) link. Such RF links have limited bandwidth and therefore limit the amount of cameras which may be used in any one system.

Large amounts of data are produced from digital cameras. Data compression techniques
25   therefore may be used in wireless (RF) CCTV monitoring systems. However, even these were not able to allow all cameras to transmit at the same time. Therefore operators have had to switch sequentially from one camera to the next in order to monitor premises or check what was happening at a particular location.

30   A problem has been that sometimes an event has occurred at a location which was not being viewed at the time an event occurred.

The present invention arose in an attempt to overcome this and associated problems.

According to a first aspect of the invention there is provided; a camera having means for determining whether information detected in its field of view includes a moving object; processing means for determining whether said moving object exceeds a predetermined threshold; and means for transmitting at least a portion of said moving image to a remote location.

The means to obtain information preferably includes a charge coupled device (CCD) and a microprocessor arranged to discriminate between static and moving pixels or moving portions of an image. Means may be provided to modify a signal so that it is prioritised over another signal. Thus one or more cameras are configured and/or switched automatically to send image data to a monitoring centre when there is an event of interest occurring in the field of view of a camera.

According to another aspect of the present invention there is provided a Closed Circuit Television (CCTV) system including a plurality of CCTV cameras and a communication channel from each of said cameras to at least one monitor; characterised in that means is provided at a camera to obtain information indicative of displacement of an object in the camera's field of view and processing means is provided to determine whether said information exceeds a predetermined threshold, whereby if said threshold is exceeded an override signal is generated, which override signal switches the monitor to receive from said camera.

Each camera may be incorporated with a motion or infra red sensor so that images are transmitted only if movement is detected. Cameras may be adapted to follow or track a moving object. If an infra red motion detector is used to detect presence of an object in a camera's field of view, this may be configured to act as an initial warning or alert that activity is occurring in a particular camera field of view. This information may be used as an initial prioritisation of a transmitted signal and switch a monitor accordingly. In addition a higher priority may be accorded by the processing means and means for determining whether a predetermined threshold is exceeded. This is because the higher priority has associated with it a quantitative element. Thus. for example, the former

embodiment may be activated by animals such as birds or cats; whereas when combined with the latter embodiment discrimination of such events is provided.

Means may also be provided to detect areas of interest and/or to obtain information indicative of features in the images. Preferably means is provided to determine whether said information contains data indicative of any events of interest for the purposes of surveillance and monitoring. If said data is obtained and/or exceeds a predetermined threshold, an override signal is generated, which override signal switches a transmitter to transmit the image data of said camera to a monitor. The invention enables one or more portions of an image frame to be transmitted, if for example, these areas of interest contain events of interest and there is a risk of a channel reaching its capacity. Thus in the unlikely event of several cameras transmitting data at the same time, a monitor may be adapted to receive images from more than one camera at the same time, for example, by reconfiguring a scream into two or more sections. Alternatively an image store, such as a buffer, may be provided. The image store enables once retrieved, an image to be viewed at a different time from another.

Means is preferably also provided to determine which portion of the data is useful and which portion of the data is superfluous, such as static objects. Advantageously means is provided to encode data to be transmitted in for example, MPEG 4 format, so as to reduce the amount of transmitted data.

The means to obtain information preferably includes a charge couple device (CCD) and a microprocessor, frame store, and/or dedicated circuits such as ASIC's, to discriminate pixel features. The said microprocessor and ASIC's may be configurable and programmable, and may be able to communicate with other cameras via one or more communication channels.

Actuator means for displacing the field of view of the camera may be provided. The actuator means may be operated under control of a microprocessor which is arranged to displace the camera so that objects of interest are maintained within a field of view.

Artificial intelligence, for example in the form of a neural network, may be included in the system.

In order to increase channel carrying capacity means may be provided to discriminate
5   moving portions of an image and image portions occupied by objects. Discriminating moving portions of an image may be implemented by a motion detector using consecutive images. Discriminating image portions occupied by an objects may be implemented by object detector using an adopted reference image containing only background image information.

10

Means may also be provided to detect movement direction, or main direction of movement if there are multiple directions in the view of camera, so that the camera may be adapted to follow or track the moving object/objects.

15   Embodiments of the invention will now be described, by way of example only, and with reference to the Figures, in which:

Figure 1 shows a block diagram of an example of a camera in accordance with the invention;

20

Figure 2 shows a functional block diagram of a camera processing unit;

Figure 3 shows a block diagram of a moving edge detector which is incorporated into the camera to detect moving objects;

25

Figure 4 shows a block diagram of an object detector; and

Figure 5 is an overall view of a system including four cameras.

30   Figure 1 shows a block diagram of a camera 2, which includes Processing Unit 10 and MPEG 4 encoder 4. An actuator 8 is provided to move camera 2 in a controlled

manner, eg, by tilting, panning or zooming. Processing unit 10 is shown in greater detail in Figure 2.

Referring to Figure 1, camera 2 has a lens 6 and an image detector which is preferably a

5   charge coupled device (CCD). Outputs of camera 2 are a transmission Request Signal, to request a transmitter to transmit data when there is an event detected and Tracking Control signal, to control actuator 8 to follow event movement. Whole Image is the same image as obtained from a normal camera. Area of Interest (AOI) Image outputs images in area of interest. MPEG 4 Image outputs MPEG 4 encoded images of an AOI

10   Image.

Operation of the camera will now be described, with reference to Figure 2. Referring to Figure 2, three frames of sequential video images 11 are stored in three frame stores, FS1 21, FS2 22 and FS3 23. Using the three images, a moving edge detector 31 detects

15   moving edges in an image and generates a moving edge image. A reference image 32 containing only background image data is used to compare with sequential images in order to detect whether objects are present in the camera's field of view. The reference image may automatically be adopted whenever there is not an object detected so as to overcome the problem of change of ambient lighting conditions. By comparing a

20   reference image 32 with images from FS2 22, the object detector 33 detects whether or not there are events of interest present in the images.

Using the information inherent in moving edge images, and of objects detected, three features can be detected. These are: events of interest, directions of moving objects and

25   areas of interest. Detection is by way of high level of analysis. Interest Analyser 43 estimates whether there is an event of interest in the field of view. This may be an object/or person present, or just a static background. From the event of interest detected, means for decision making 50 determines when or which images are to be transmitted. Area of interest (AOI) analyser 42 measures an area of interest in the image in the

30   region where an event of interest is detected. Thus, only data in AOI is transmitted. Other parts of the image are ignored as they are relatively static and therefore discarded. Thus bandwidth is saved. By using the technique of block matching, direction analyser

41 detects an overall direction of movement of the event. This information may be used to control an actuator so that if present, actuator 15 controls camera 2 in order to follow an event of interest.

5   From the three variables: events of interest, directions of moving objects and areas of interest, decision making means 50 generates three signals, A, B and C. Signal A informs image buffer 60 to be ready to send an image and which part of the image is to be sent. Signal B requests transmitter to transfer images by overriding any existing channel. Signal C controls camera 10 in Figure 1 so that it tracks the events of interest if

10   necessary, by tilt, pan or zoom. The image is then encoded by MPEG 4 encoder and transmitted either via a hardwire (fibre optic) connection or as an rf, VHF or UHF signal.

Moving edge detector is illustrated diagrammatically in Figure 3. Three consecutive

15   images of sequential video images 11 are stored in three frame stores, FS1 21, FS2 22 and FS3 23, and used for moving edge detection. I_1 (x,y), $I_2(x,y)$ and I_3 (x,y) denote the three consecutive images respectively. The input of Edge Detection 32 is I_2 (x, y) and its output is $E_2(x,y)$ is an edge image from image $I_2(x,y)$. Inputs of temporal difference (1) 31 are $I_1(x,y)$ and $I_2(x,y)$, and output is a difference image $D_{12}(x,y)$ which is defined as

20   the following equation:

$$D_{12}(x,y)= \left| I_1 \ (x,y) - I_2(x,y) \right| \qquad\qquad \text{Eqn (1)}$$

25   The inputs of temporal difference (2) 33 are I_2 (x, y) and I_3 (x, y), and its output is a difference image D_{23} (x, y) which is defined in equation 2 as the follows:

$$D_{23}(x,y) = \left| I_2(x,y) - I_3(x,y) \right| \qquad\qquad \text{Eqn (2)}$$

30

The inputs of Multiplication 41 are $D_{12}(x,y)$. $E_2(x,y)$ and $D_{23}(x,y)$ and its output $M(x,y)$ is calculated as the follows:

$$M(x,y)= D_{12}(x,y).E_2(x,y).D_{23}(x,y) \hspace{2cm} \text{Eqn (3)}$$

5   The output of threshold device 42 is the moving edge image $ME(x,y)$ 12, which is defined as follows:

$$\text{ME}(x,y) = \begin{cases} M(x,y), if M(x,y) > T_m \\ 0, Otherwise \end{cases} \hspace{1cm} \text{Eqn (4)}$$

10

where T_m is a threshold for moving edge detection.

An example of object detector is illustrated in Figure 4. Frame store FS2 21 contains the input image 11, which is one of the sequential images of camera 2 and may contain
15   objects. Reference Image 22 is a frame store containing a reference image which contains only background image. The reference image may automatically be adopted by input image 11 whenever there is not an object detected in the image. Thus, the problem of changes in light intensity can be overcome. Let I_2 (x,y) and $R(x, y)$ denote the image in FS2 and the reference image respectively. By comparing I_2 (x, y) and $R(x, y)$, the
20   Intensity Subtraction 23 generates a difference image $D(x,y)$, which is calculated as the follows:

$$D(x, y) = | I_2 (x,y) - R(x, y) | \hspace{2cm} \text{Eqn (5)}$$

25   Then, using a technique of thresholding, the output $O(x,y)$ of thresholding means 31 is defined as follows:

$$O(x, y) = \begin{cases} 1, if d(x,y) > T_o \\ 0, Otherwise \end{cases} \hspace{1cm} \text{Eqn (6)}$$

30

where 1 indicates that the pixel is an object   pixel, 0 indicates that the pixel is a
background pixel, and T_0 threshold for object detection.

Through analyser 32, the output signal 12 indicates whether an object or objects have
been detected.

Figure 5 is a diagramatical overall view of a system 100 including four cameras 100A,
B, C and D. Cameras 100 A and B are connected to a monitoring station 104 via hard
wire connectors. Cameras 100C and D are connected to monitoring station 104 via rf
transmitters 106C and 106D and via rf receiver 108.

Monitoring station 104 is connected to a plurality of monitors 110 of which only one is
shown. The screen 112 of the monitor is capable of being divided into four sections and
images from one or more cameras displayed in the or each section.

The invention has been described by way of examples only and variation may be made
to the embodiments described without departure from the scope of the invention.

CLAIMS

5

1. A camera having means for determining whether information detected in its field of view includes a moving object; processing means for determining whether said moving object exceeds a predetermined threshold; and means for transmitting at least a portion of said moving image to a remote location.

10

2. A camera according to claim 1 wherein the means for transmitting at least a portion of said moving image is a radio frequency (rf) transmitter.

3. A camera according to claim 1 or 2 wherein the camera has an actuator arranged

15 to tilt, pan or zoom.

4. A camera according to claim 1, 2 or 3 wherein at least one motion sensor is included so that images are transmitted only if movement is detected.

20 5. A Closed Circuit Television (CCTV) Camera and System including a plurality of CCTV cameras and a communication channel from each of said cameras to at least one monitor; characterised in that means is provided at a camera to obtain information indicative of displacement of an object in the camera's field of view and processing means is provided to determine whether said information

25 exceeds a predetermined threshold. whereby if said threshold is exceeded an override signal is generated, which override signal switches a monitor to receive from said camera.

6. A system according to claim 5 wherein the means to obtain information includes

30 a charge coupled device (CCD) and a microprocessor arranged to discriminate between static and moving pixels or moving portions of an image.

7.

7. A system according to claim 5 including artificial intelligence, for example, in the form of a neural network.

5

8. A method of transmitting image data, obtained by a camera, to a remote location, comprising the steps of: determining whether an object, in the field of view of the camera, is moving and if so whether it exceeds a predetermined threshold; generating an override signal if said threshold is exceeded, transmitting at least a portion of the image data with the override signal to a remote location; said override signal being configured so as to switch a monitor, at the remote location, to display said portion of image.
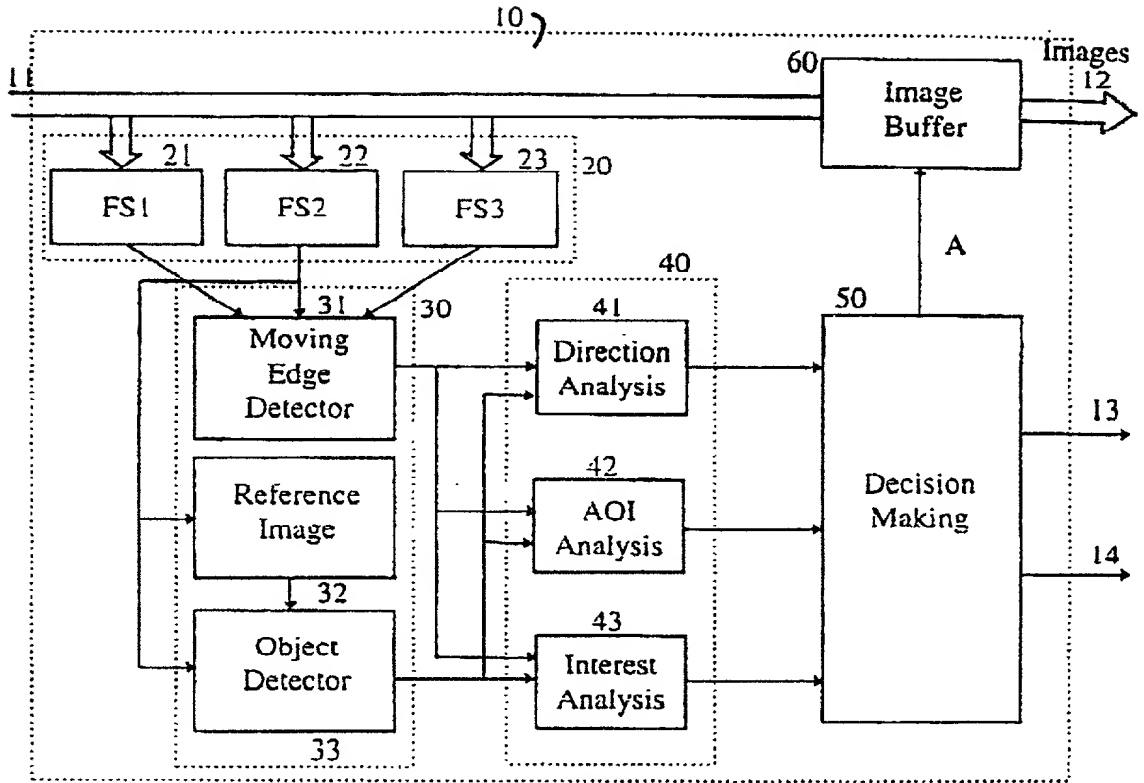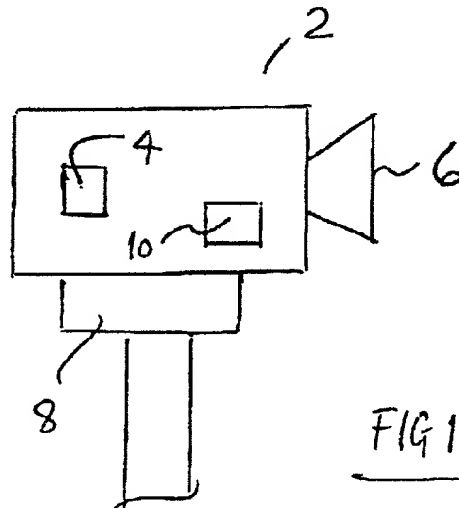
10

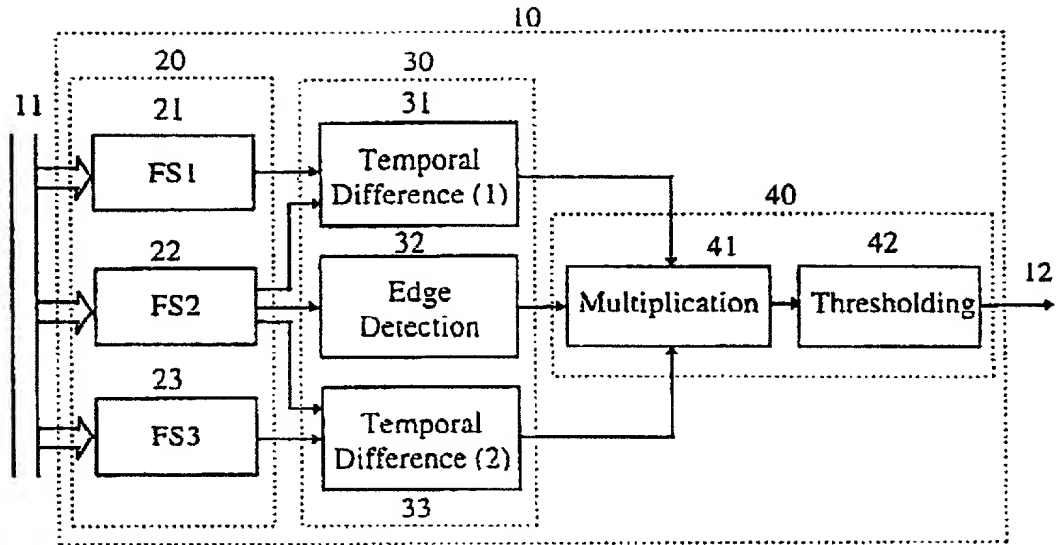FIGURE 2

Figure 1: Image processing functionality

FIG 1

9

10

20   30

11   21   31   40

FS1 → Temporal Difference (1)

41   42   12

22   32

FS2 → Edge Detection → Multiplication → Thresholding →

23

FS3 → Temporal Difference (2)

33

Figure 3. Moving edge detector

10
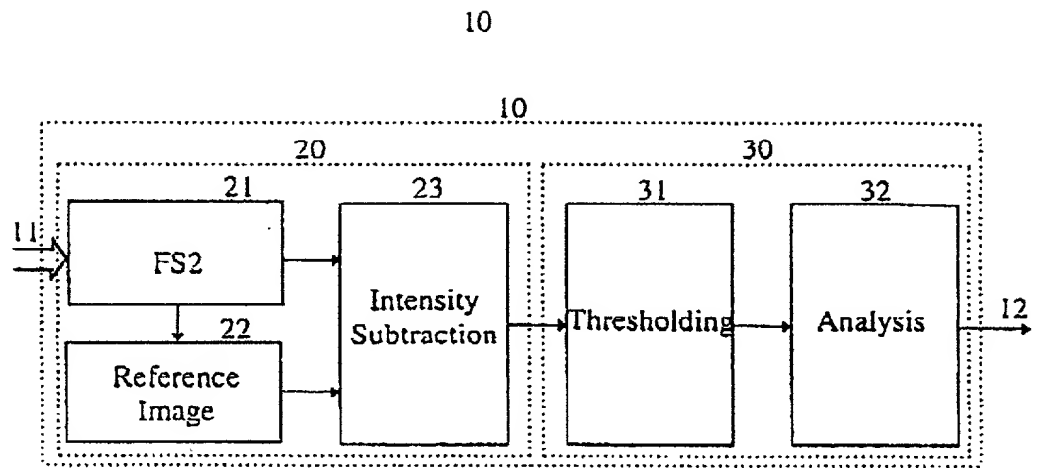
Figure 4 Object detector

4/4

100A

100B

106c   100c

106D   100D

104   108

Rx

110

112
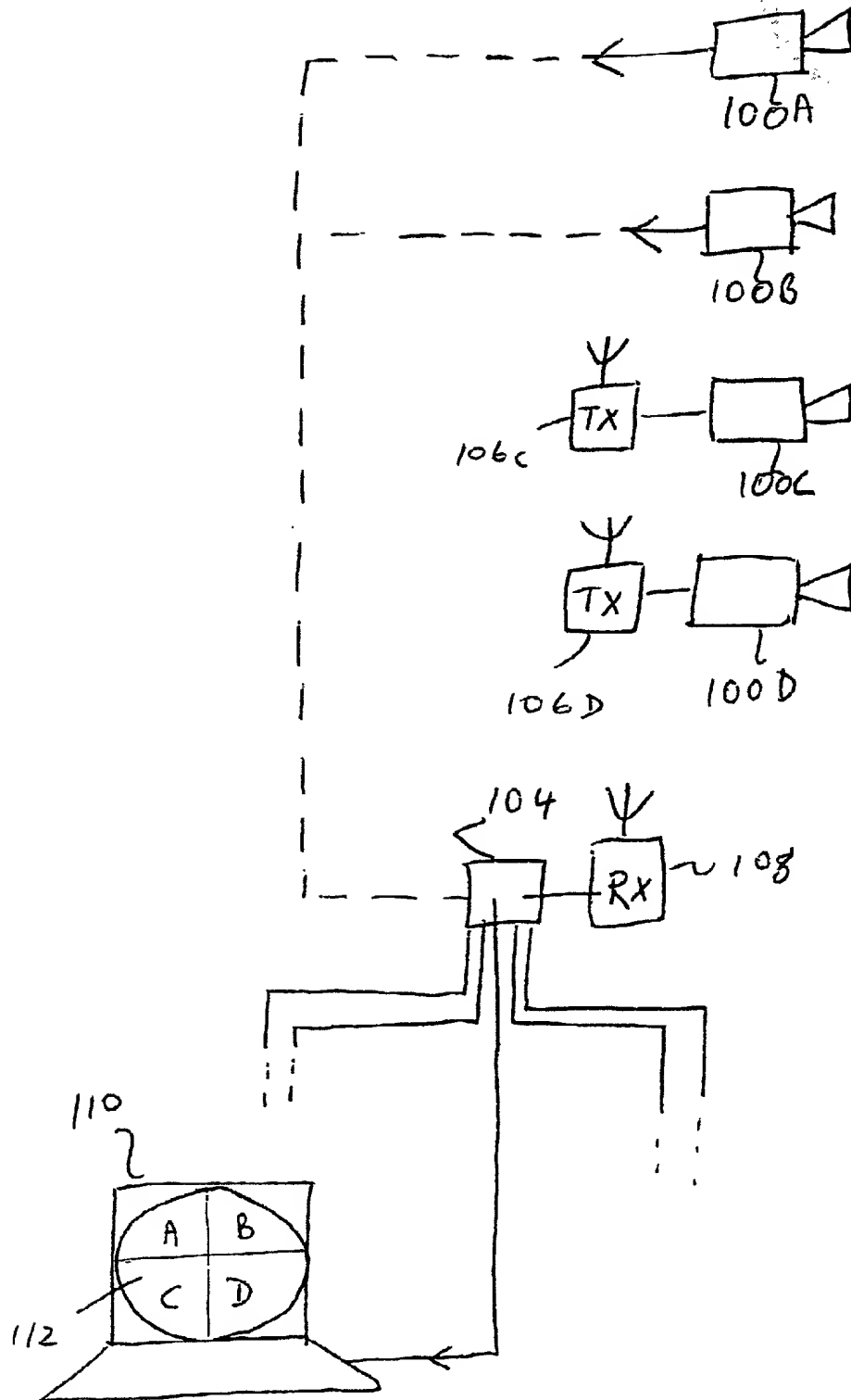
A | B
C | D

FIG 5

IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney (Sole Inventor)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled <u>Closed circuit</u> <u>television (CCTV) camera and system</u>

---

the specification of which;   ☐ is being filed herewith.

☒ was filed on __06 September 2001__.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

I acknowledge the duty to disclose all information known to me which is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

I hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:

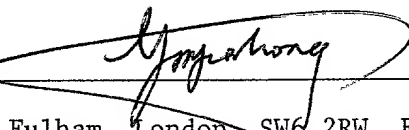|	
William H. Bollman	(Reg. No. 36,457)
W. Warren Taltavull	(Reg. No. 25,647)
Edward J. Stemberger	(Reg. No. 36,017)
Jeffrey S. Melcher	(Reg. No. 35,950)
Leon R. Turkevich	(Reg. No. 34,035)
Paul E. White, Jr.	(Reg. No. 32,011)

Please address all correspondence to:

William H. Bollman
MANELLI DENISON & SELTER PLLC
2000 M Street, N.W. Suite 700
Washington, DC 20036-3307
TEL: (202)261-1000
FAX: (202)887-0336

Please direct all telephone calls to:

William H. Bollman at (202) 261-1020.

Full name of sole inventor: Jia Hong Yin

Inventor's signature _____ Date: 14/11/2001

Residence: Fulham, London, SW6 2RW, England

Citizenship: British

Post Office Address: 3 Watermeadow Lane, Fulham, London, SW6 2RW, England